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CHARTS & TABLES

Production and Consumption of Manufactured Dairy Products; Changes in Seasonal Variation of Butter Production; Cost of Manufacture and Distribution of Butter and Cheese.

Prepared by E. E. Viel

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Charts & Tables

Production and Consumption of Manufactured Dairy Products  
Changes in Seasonal Variation of Butter Production  
Cost of Manufacture and Distribution of Butter and Cheese

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Prepared by

E. E. VIAL

Washington, D. C.  
May 1937

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113-113

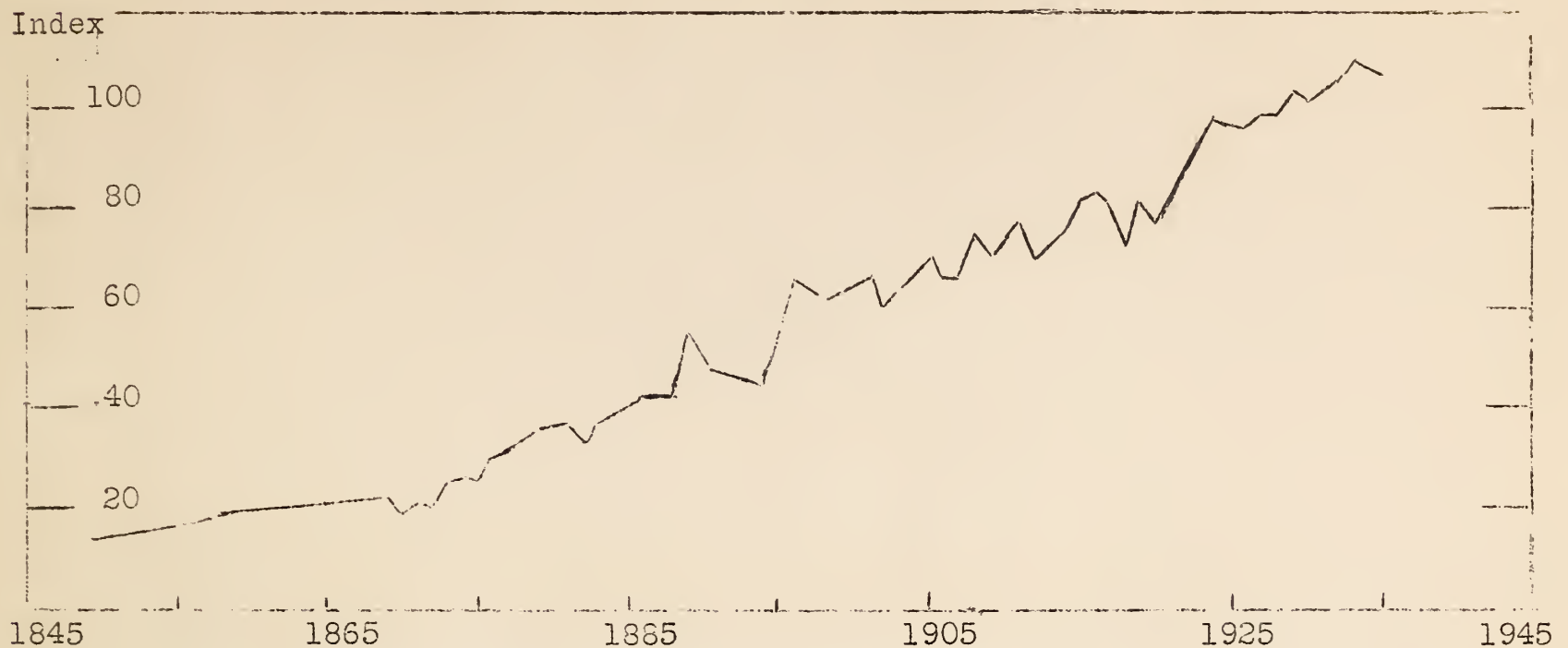
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FIGURE 1.- TOTAL PRODUCTION OF MANUFACTURED DAIRY PRODUCTS (MILK EQUIVALENT) IN THE UNITED STATES, 1849-1936

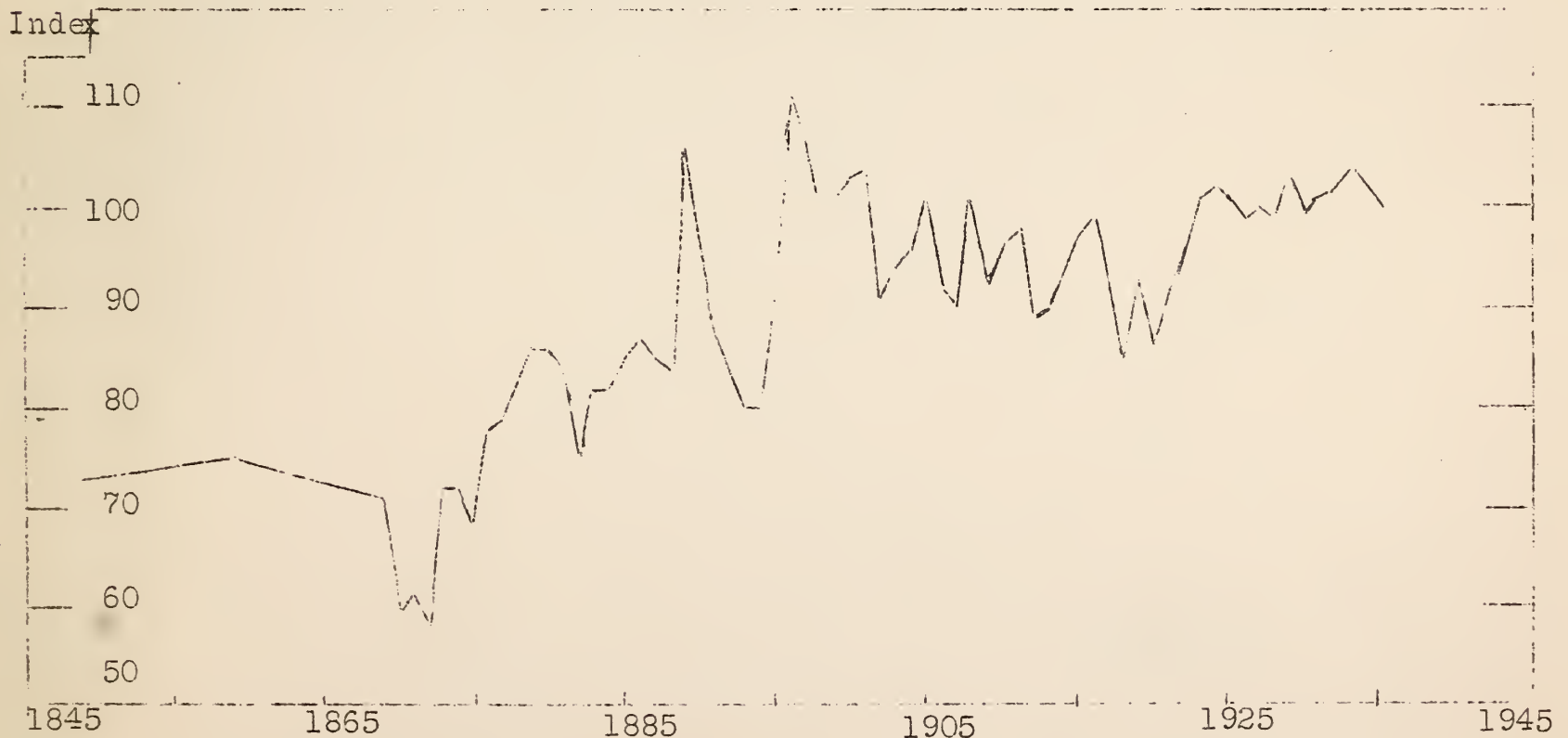
1926-30 = 100



In the 46-year period 1869-1914, production increased at the rate of 2.99 percent per year, and in the post-war period 1919-34 at a lower rate, 2.02 percent per year.

FIGURE 2.- PRODUCTION OF MANUFACTURED DAIRY PRODUCTS (MILK EQUIVALENT) PER CAPITA IN THE UNITED STATES, 1849-1936

1926-30 = 100



Per capita production of manufactured dairy products (milk equivalent) rose from 1869 to 1896, but declined in the period 1896 to 1914. From 1924-36 per capita production has been stable at about 8 percent above the 1910-14 average.

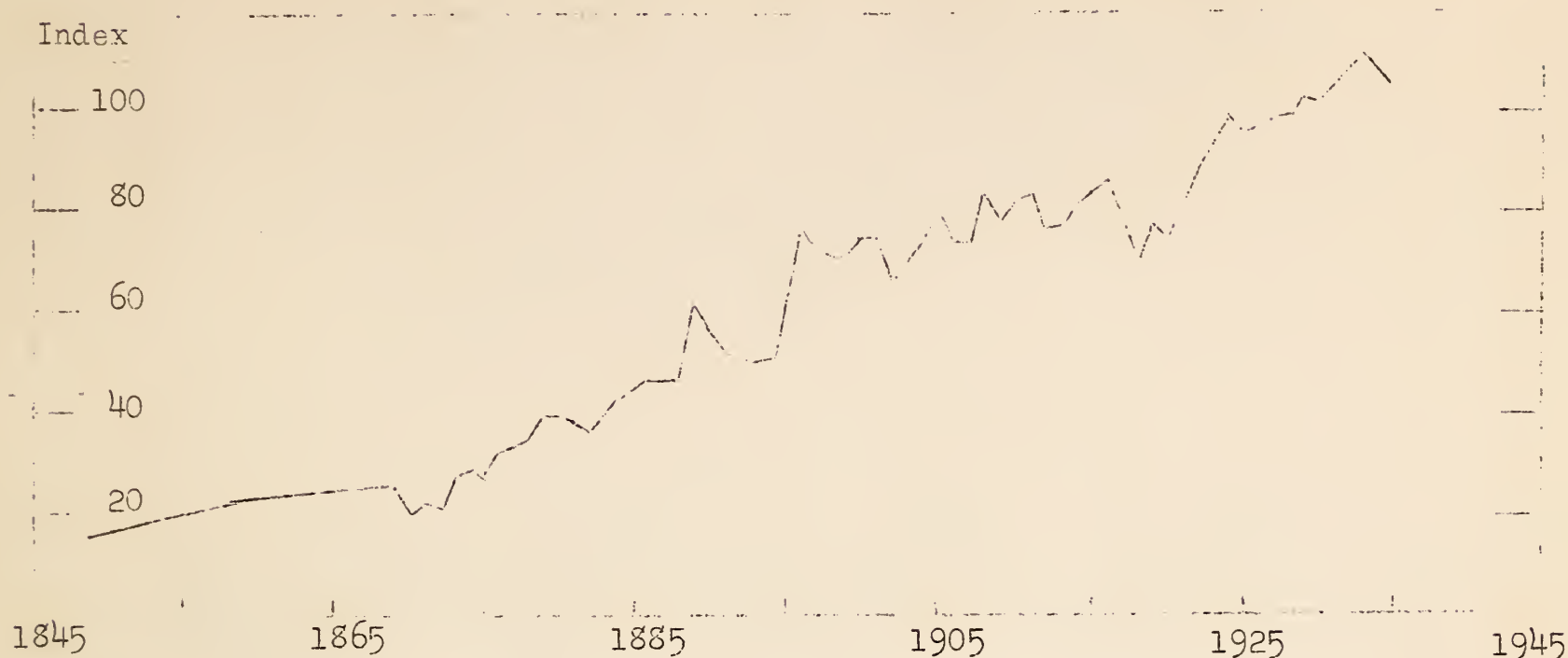




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FIGURE 3.- TOTAL BUTTER PRODUCTION IN THE UNITED STATES, 1849-1936

1926-30 = 100



In the 46-year period 1869-1914 butter production increased at the rate of 3.08 percent per year, and in the 16-year period 1919-34 at the rate of 2.18 percent per year.

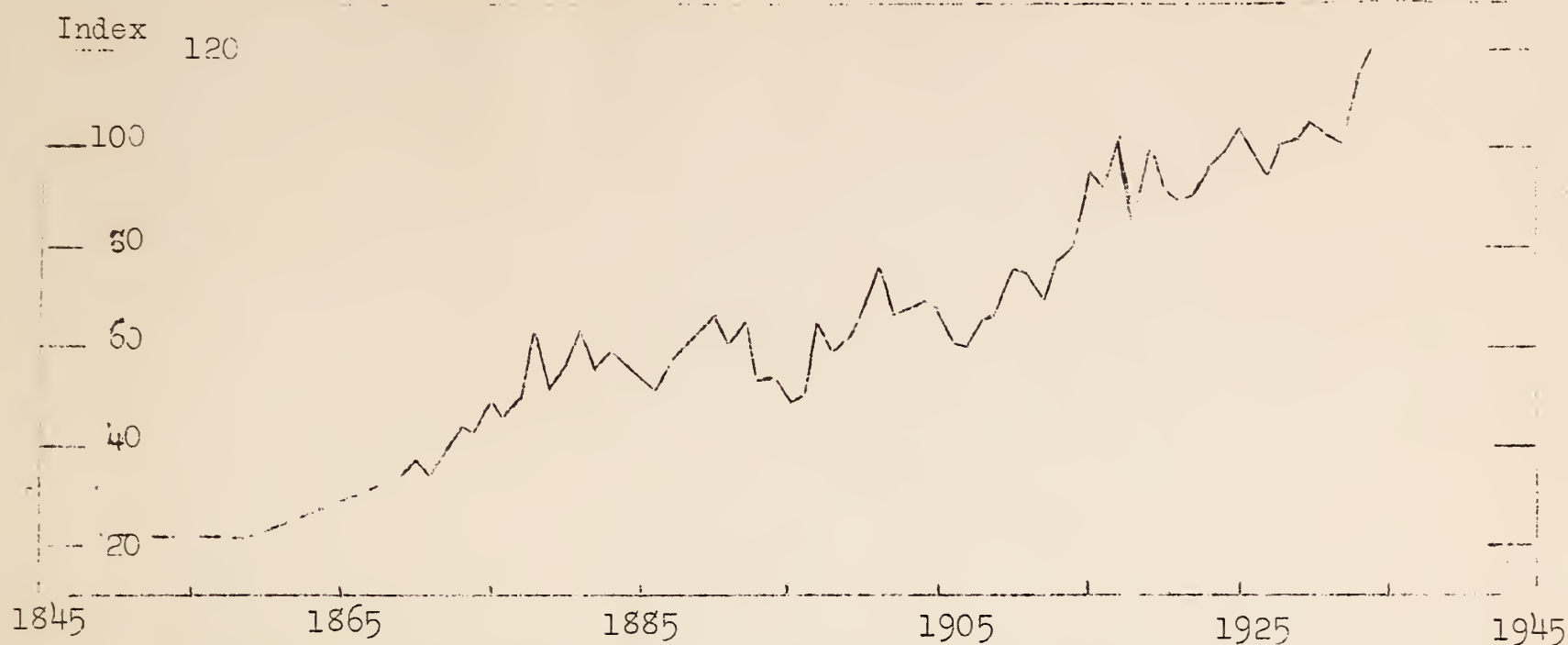
FIGURE 4.- PRODUCTION AND CONSUMPTION OF BUTTER PER CAPITA IN THE UNITED STATES, 1849-1936



Per capita production of butter rose from 1869 to 1896, declined during the 18-year period prior to the World War, but during the last 12 years has been relatively stable at slightly above the 1910-14 level. Consumption fluctuates with production.

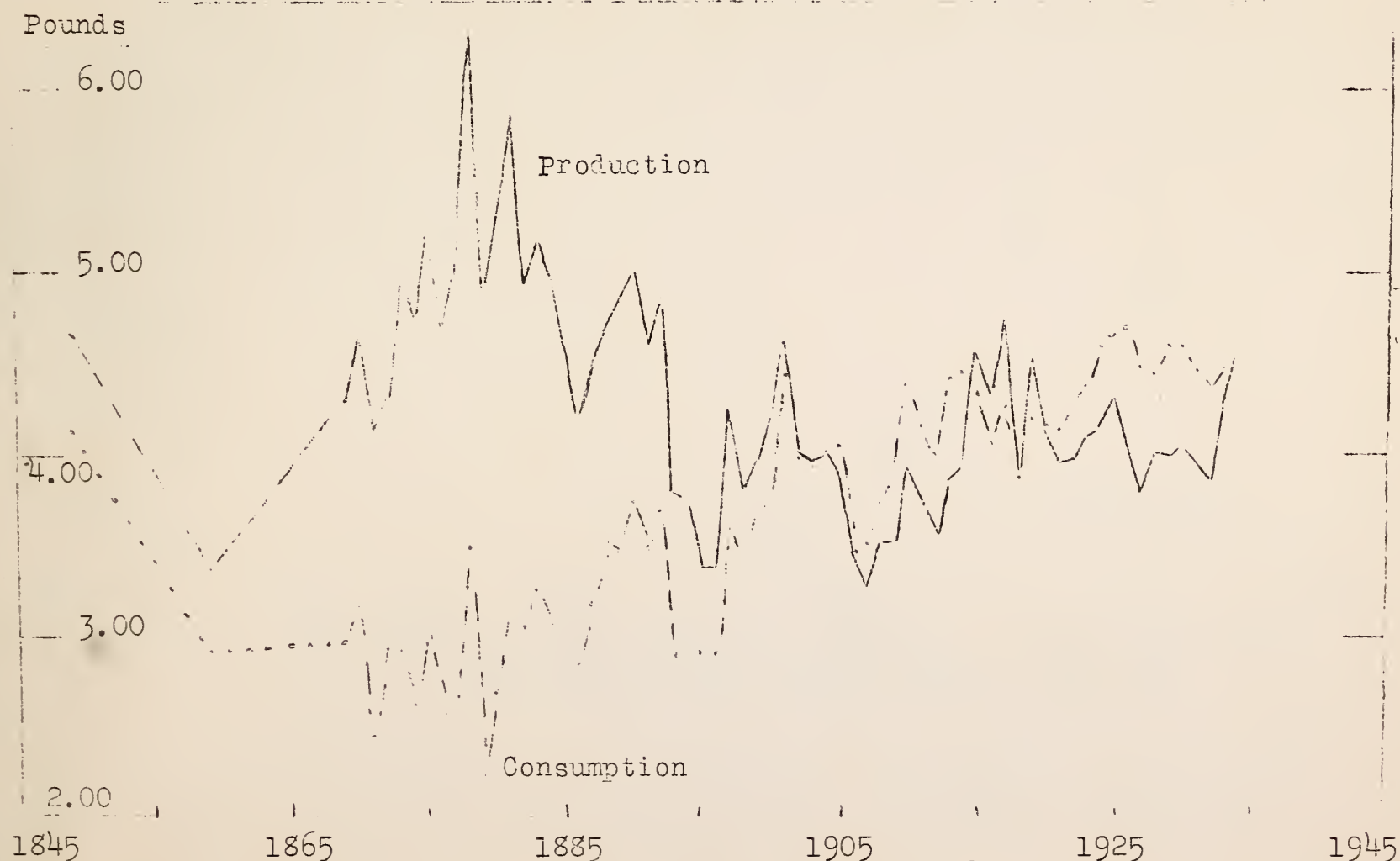


FIGURE 5.- TOTAL CHEESE PRODUCTION IN THE UNITED STATES, 1849-1936  
1926-30 = 100



Total cheese production increased at the rate of 1.30 percent per year in the period 1869 to 1914, and at the rate of 1.31 percent per year in the period 1919 to 1934.

FIGURE 6.- PRODUCTION AND CONSUMPTION OF CHEESE PER CAPITA IN THE UNITED STATES, 1849-1936



Per capita production of cheese increased from 1869 to 1878, but declined rapidly during the 1880's and early 90's. From 1892 to 1935 cheese production per capita has shown no consistent tendency to increase or decrease. The general trend of per capita consumption of cheese has been upward from 1869 to 1936.



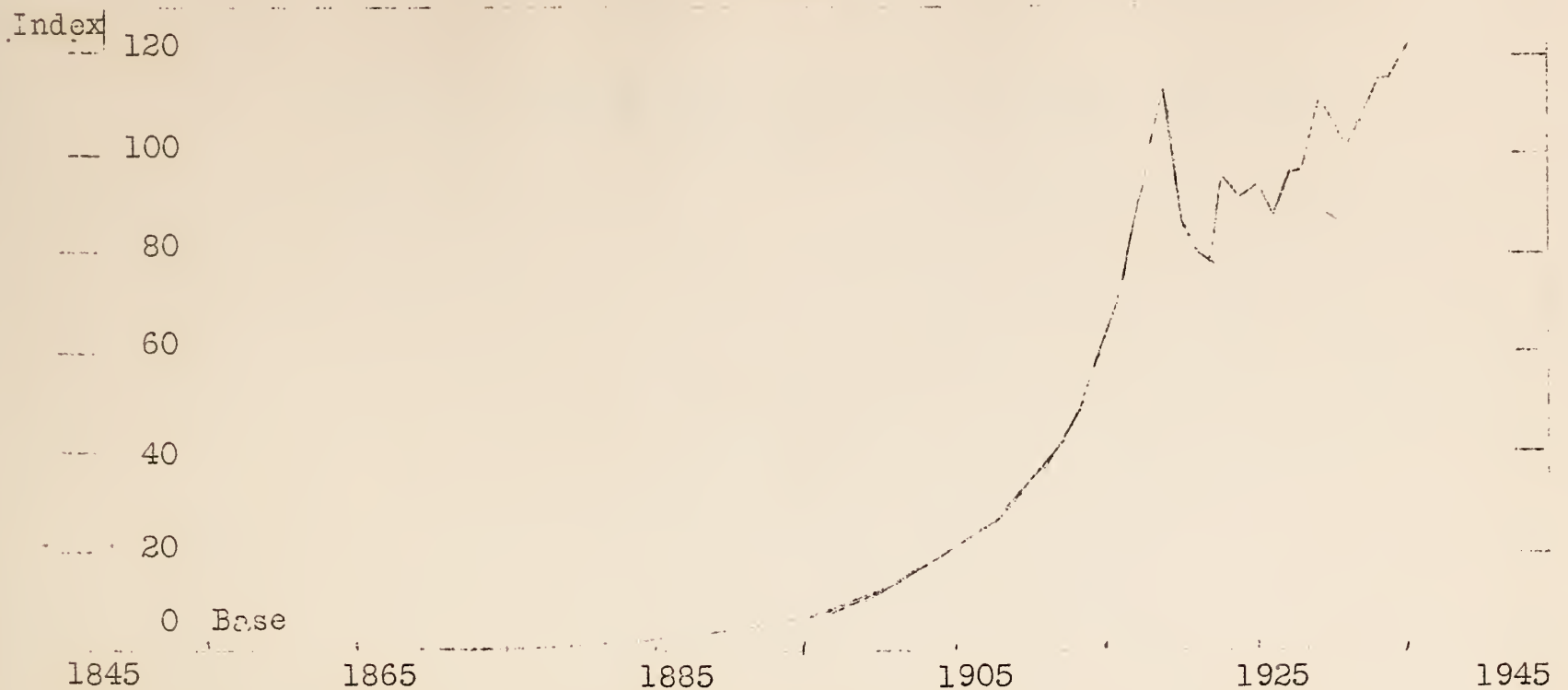


FIGURE 7. - TOTAL PRODUCTION OF CONDENSED AND EVAPORATED MILK IN THE UNITED STATES, 1869-1936  
1926 - 30 = 100

In the period 1869 to 1914 production of condensed and evaporated milk increased at the rate of 13.19 percent per year, and in the period 1920 to 1934 at the rate of 2.54 percent per year.

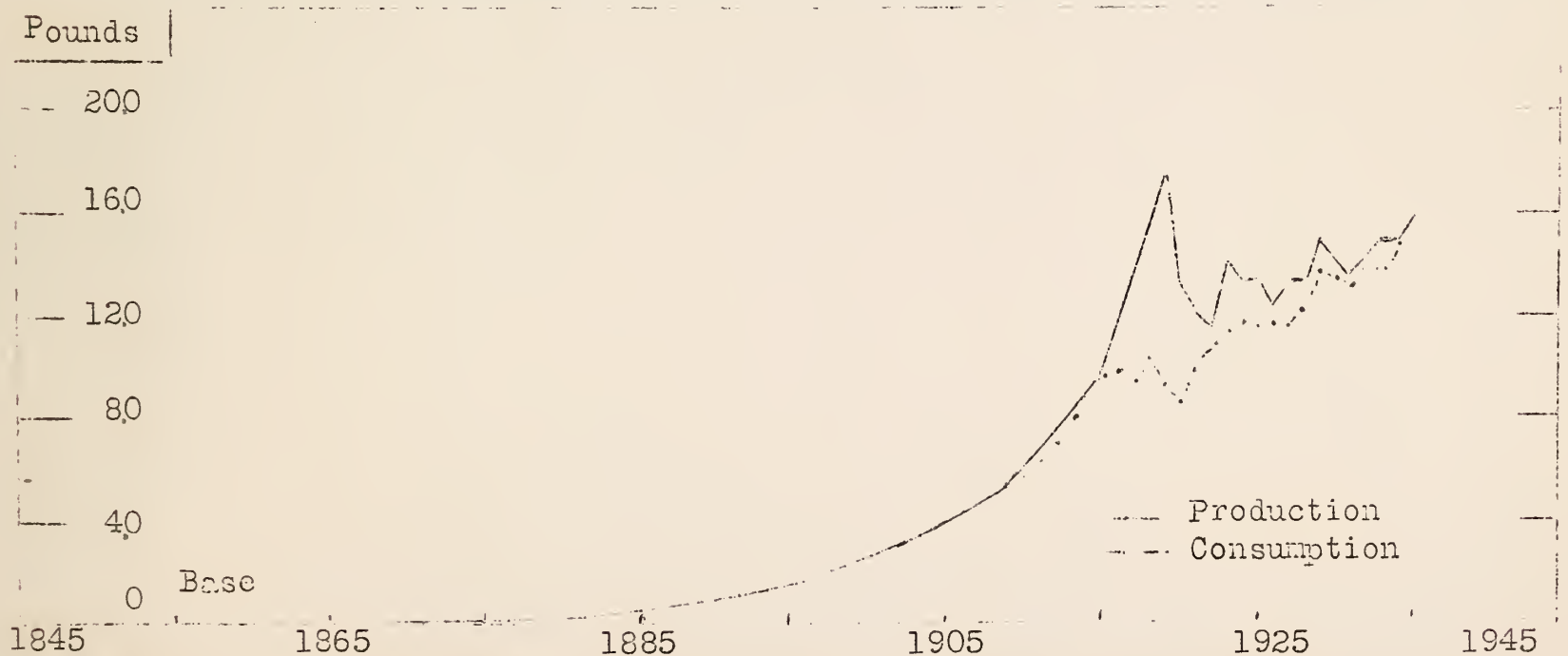


FIGURE 8. - PRODUCTION AND CONSUMPTION OF CONDENSED AND EVAPORATED MILK PER CAPITA IN THE UNITED STATES, 1869-1936

In the period 1869 to 1914 production of condensed and evaporated milk per capita increased at the rate of 10.82 percent per year and in the period 1920 to 1934 at the rate of 1.25 percent per year. Per capita consumption of condensed and evaporated milk increased at the rate of 2.97 percent per year in the period 1920-34.





FIGURE 9. - FACTORY PRODUCTION OF ICE CREAM, 1859-1936  
1926-30 = 100



The long-time upward trend in factory production of ice cream was interrupted during the recent depression.

FIGURE 10. - FACTORY PRODUCTION OF ICE CREAM PER CAPITA, 1869-1936

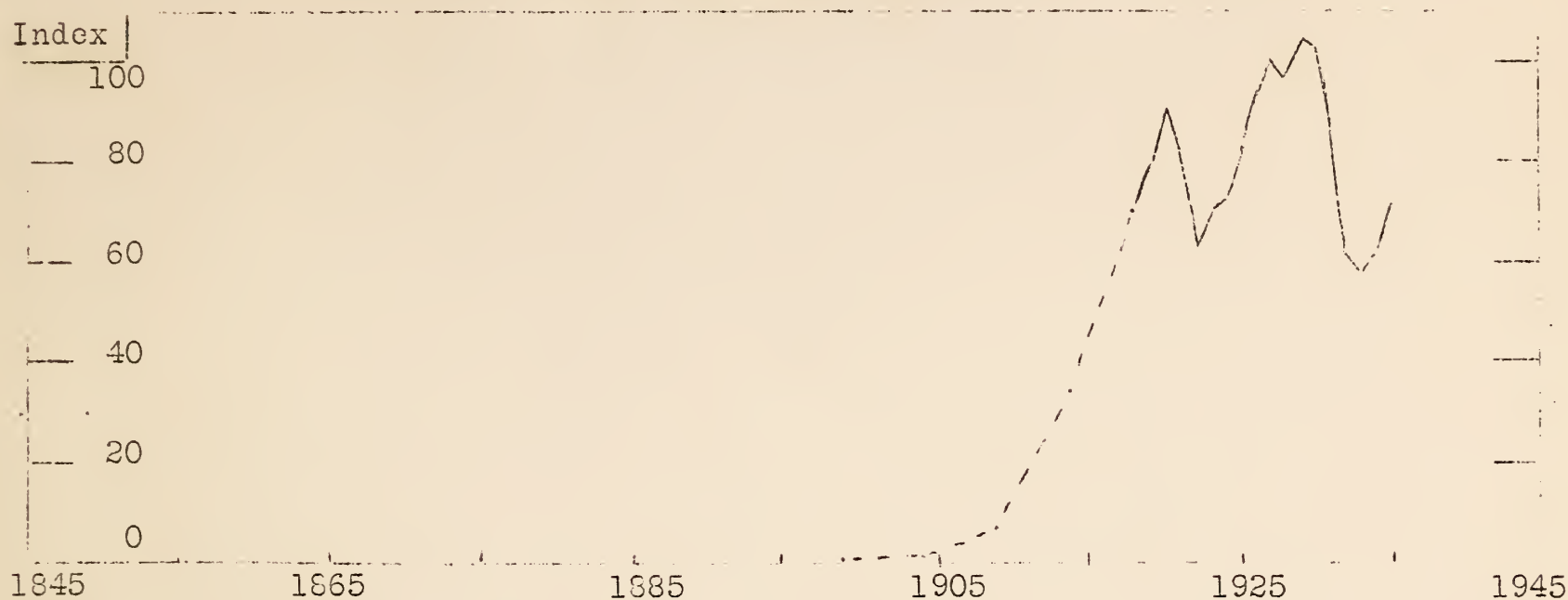


From 1919 to 1929 per capita production of ice cream increased at the rate of 4.50 percent per year. During the depression, however, production was greatly reduced.



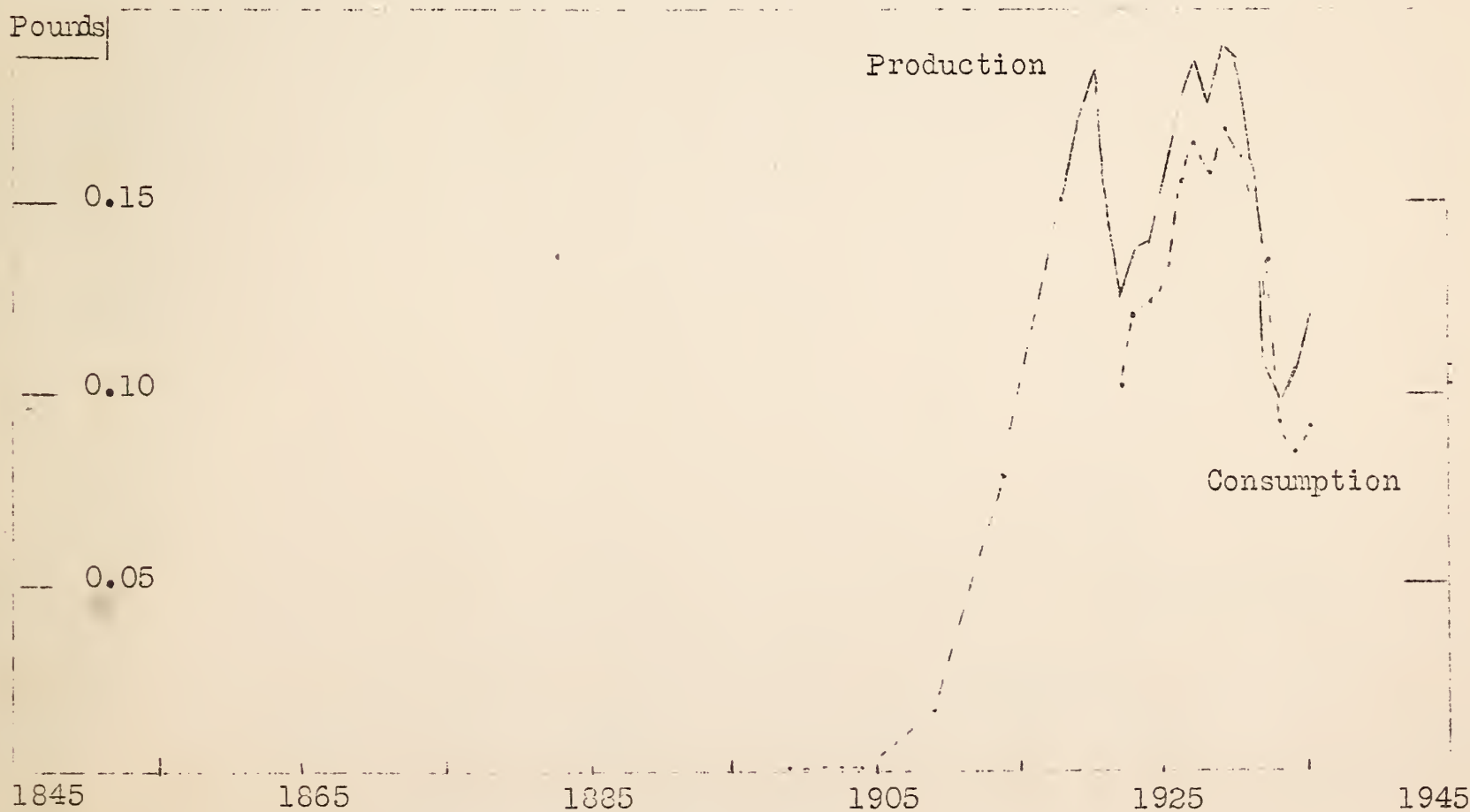
FIGURE 11.- PRODUCTION OF MALTED MILK IN THE UNITED STATES, 1887-1935

1926-30 = 100



Since the World War production of malted milk has fluctuated violently but has shown no consistent tendency to increase or decrease.

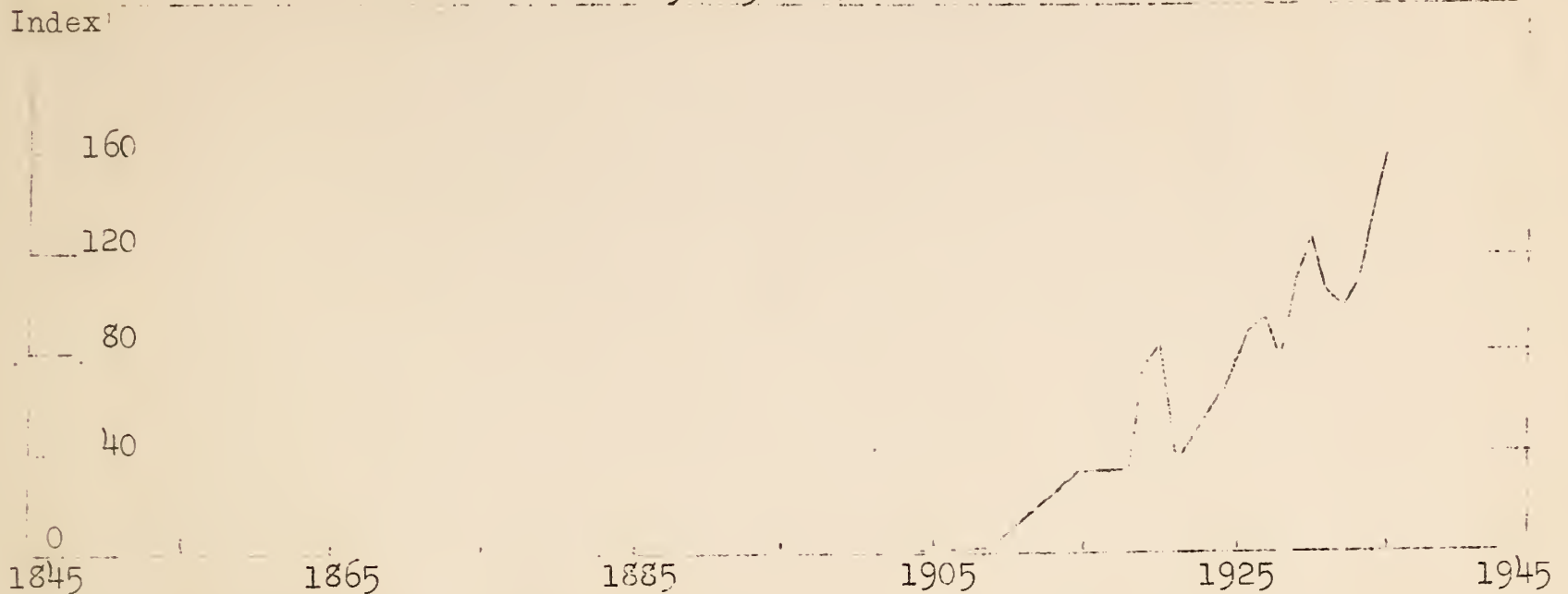
FIGURE 12.- PRODUCTION AND CONSUMPTION OF MALTED MILK PER CAPITA IN THE UNITED STATES, 1899-1935



Production and consumption fluctuate together.

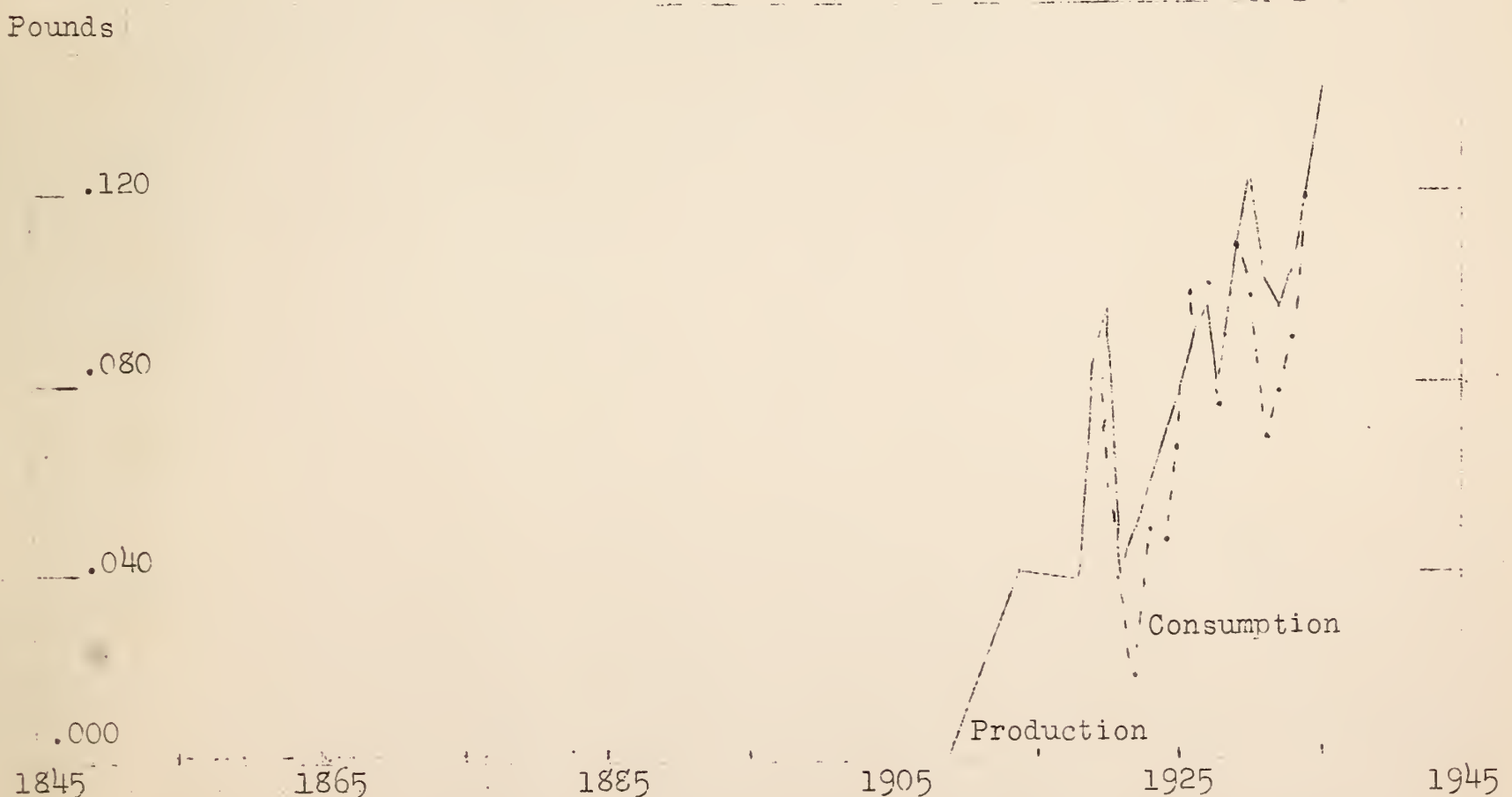


FIGURE 13.- PRODUCTION OF POWDERED (WHOLE MILK) IN THE UNITED STATES,  
1899 - 1936  
1926-30 = 100



In the 16-year period 1919-34 production of powdered milk increased at the rate of 5.54 percent per year.

FIGURE 14.- PRODUCTION AND CONSUMPTION OF POWDERED (WHOLE MILK) PER CAPITA IN THE UNITED STATES, 1909-36



In the 16-year period 1919-34 per capita production of powdered milk increased at the rate of 4.17 percent per year.



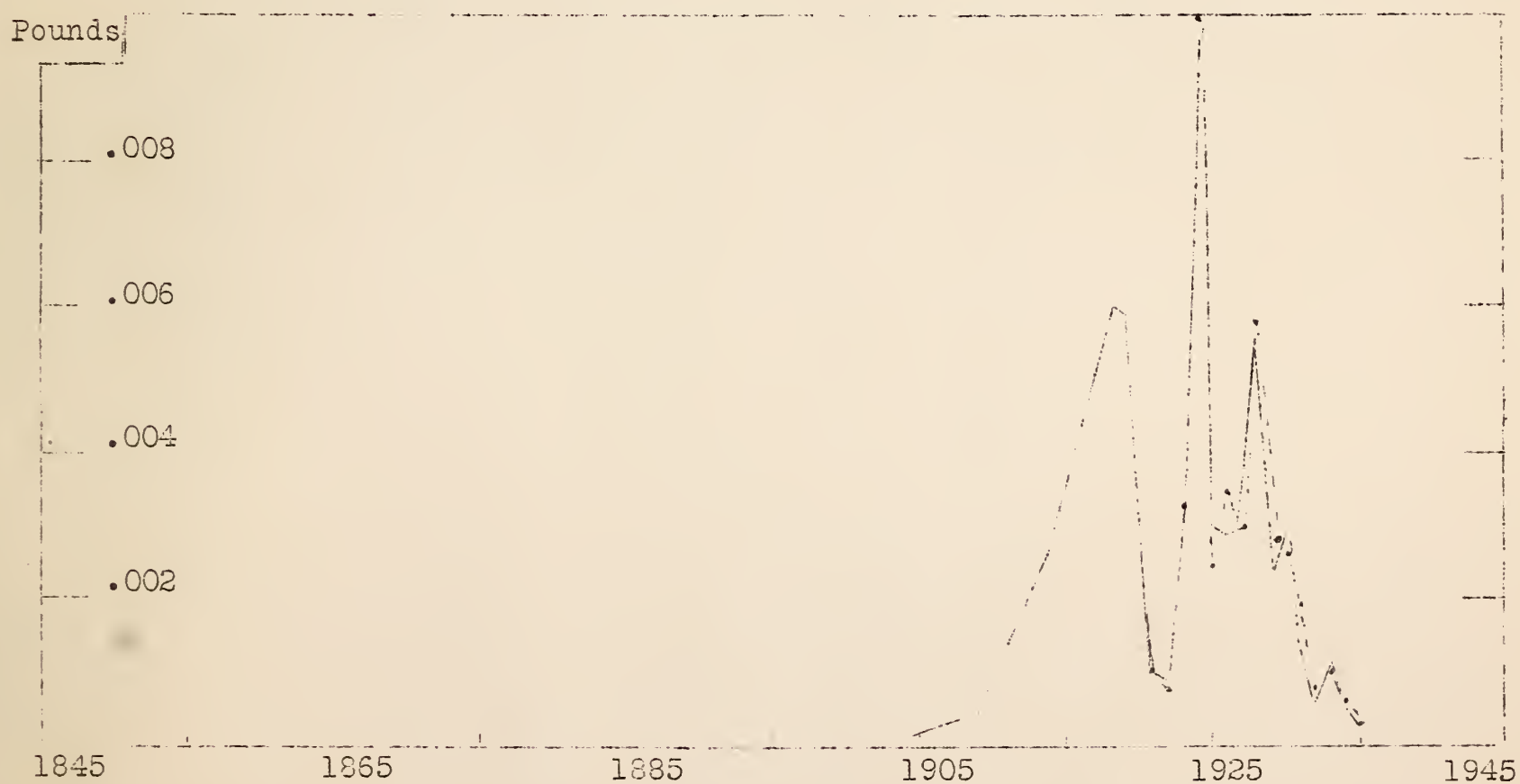


FIGURE 15. - PRODUCTION OF POWDERED CREAM IN THE UNITED STATES, 1899-1935  
1926-30 = 100



Production of dried cream has fluctuated violently.

FIGURE 16.- PRODUCTION AND CONSUMPTION OF POWDERED CREAM PER CAPITA,  
1904-1935



In the period 1919-34, per capita production of dried cream declined at the rate of 6.47 percent per year.



FIGURE 17.-CONSUMPTION OF MANUFACTURED DAIRY PRODUCTS EXPRESSED AS A PERCENTAGE OF PRODUCTION, 1849-1934



Since the early 1880's the general tendency has been for consumption to rise in relation to production.



Table 1.- Consumption per capita of manufactured dairy products  
for selected periods, 1870-1934

Period	Butter 1/	Cheese 1/	Condensed and evaporated milks 2/	Commer- cial ice cream	Malted milk	Dried whole milk	Dried cream	Total milk equiva- lent
	Pounds	Pounds	Pounds	Gallons	Pounds	Pounds	Pounds	Pounds
1910-14	17.5	4.28	7.27	.545	.046	.018	.0015	434
1926-30	17.4	4.58	12.63	2.020	.162	.096	.0035	465
1870-79	13.1	2.83	0.18	.002				305
1880-89	16.1	3.13	0.48	.008				370
1890-99	18.2	3.33	1.52	.036				421
1900-09	18.6	3.89	3.96	.177	.006	.001	.0001	441
1910-19	16.8	4.22	8.51	.838	.087	.038	.0032	424
1920-29	17.1	4.46	11.41	1.816	.146	.066	.0035	453
1930-34	18.0	4.56	13.95	1.495	.114	.088	.0014	472
Index numbers of consumption per capita of manufactured dairy products for selected periods, 1870-1934 (1926-30 = 100)								
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1910-14	100.6	93.4	57.6	27.0	28.4	18.8	42.9	93.3
1926-30	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1870-79	75.3	61.8	1.43	0.1				65.6
1880-89	92.5+	68.3	3.80	0.4				79.6
1890-99	104.6	72.7	12.0	1.8				90.5+
1900-09	106.9	84.9	31.4	8.8	3.7	1.0	2.9	94.8
1910-19	96.6	92.1	67.4	41.5-	53.7	39.6	91.4	91.2
1920-29	98.3	97.4	90.3	89.9	90.1	68.8	100.0	97.4
1930-34	103.4	99.6	110.5-	74.0	70.4	91.7	40.0	101.5+
Consumption of manufactured dairy products (milk equivalent), percentage each product is of total, for selected periods, 1870-1934								
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1910-14	84.581	9.881	3.574	1.895	.028	.034	.007	100.000
1926-30	77.805	9.857	5.546	6.522	.091	.165	.014	100.000
1870-79	90.429	9.438	.125	.008				100.000
1880-89	91.194	8.496	.280	.030				100.000
1890-99	91.099	7.998	.777	.126	3/			100.000
1900-09	88.617	8.827	1.945	.606	.004	.001	3/	100.000
1910-19	82.611	9.969	4.252	3.025	.055	.073	.015	100.000
1920-29	78.793	9.860	5.130	6.008	.084	.111	.014	100.000
1930-34	79.209	9.646	6.178	4.749	.063	.150	.005	100.000

1/ Farm and factory.

2/ Bulk and case, unskimmed.

3/ Less than .0005.





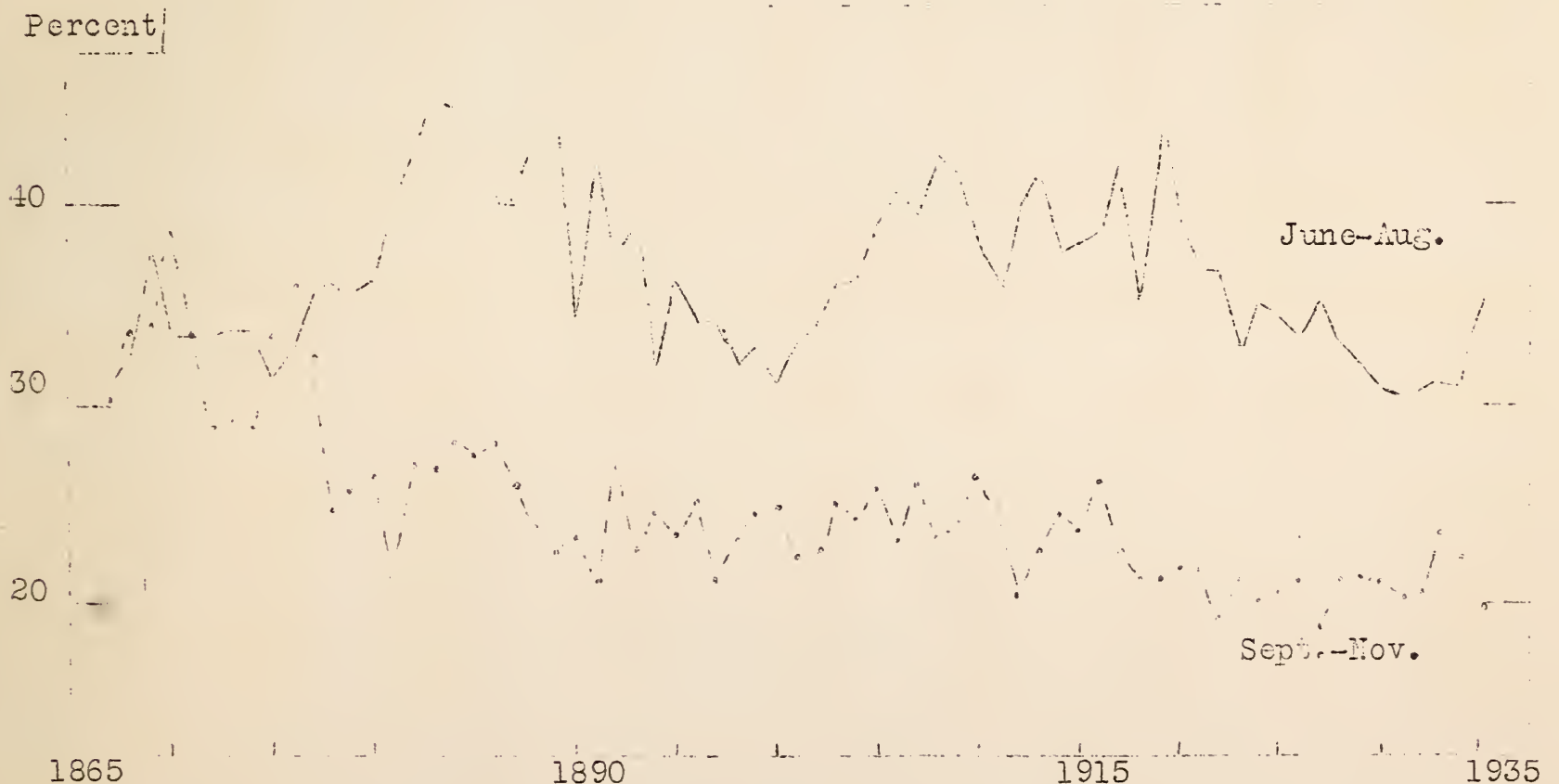


FIGURE 18. - PERCENTAGE OF ANNUAL BUTTER RECEIPTS IN THE WINTER AND SPRING MONTHS AT CHICAGO, 1867-1935



Receipts in the winter and spring months are relatively low when summer receipts are relatively high. The proportion of the receipts in March, April, and May has increased.

FIGURE 19. - PERCENTAGE OF ANNUAL BUTTER RECEIPTS IN THE SUMMER AND AUTUMN MONTHS AT CHICAGO, 1867-1935



There is a cycle in the proportion of the receipts occurring in the summer months. The proportion of the receipts in September, October, and November has decreased.



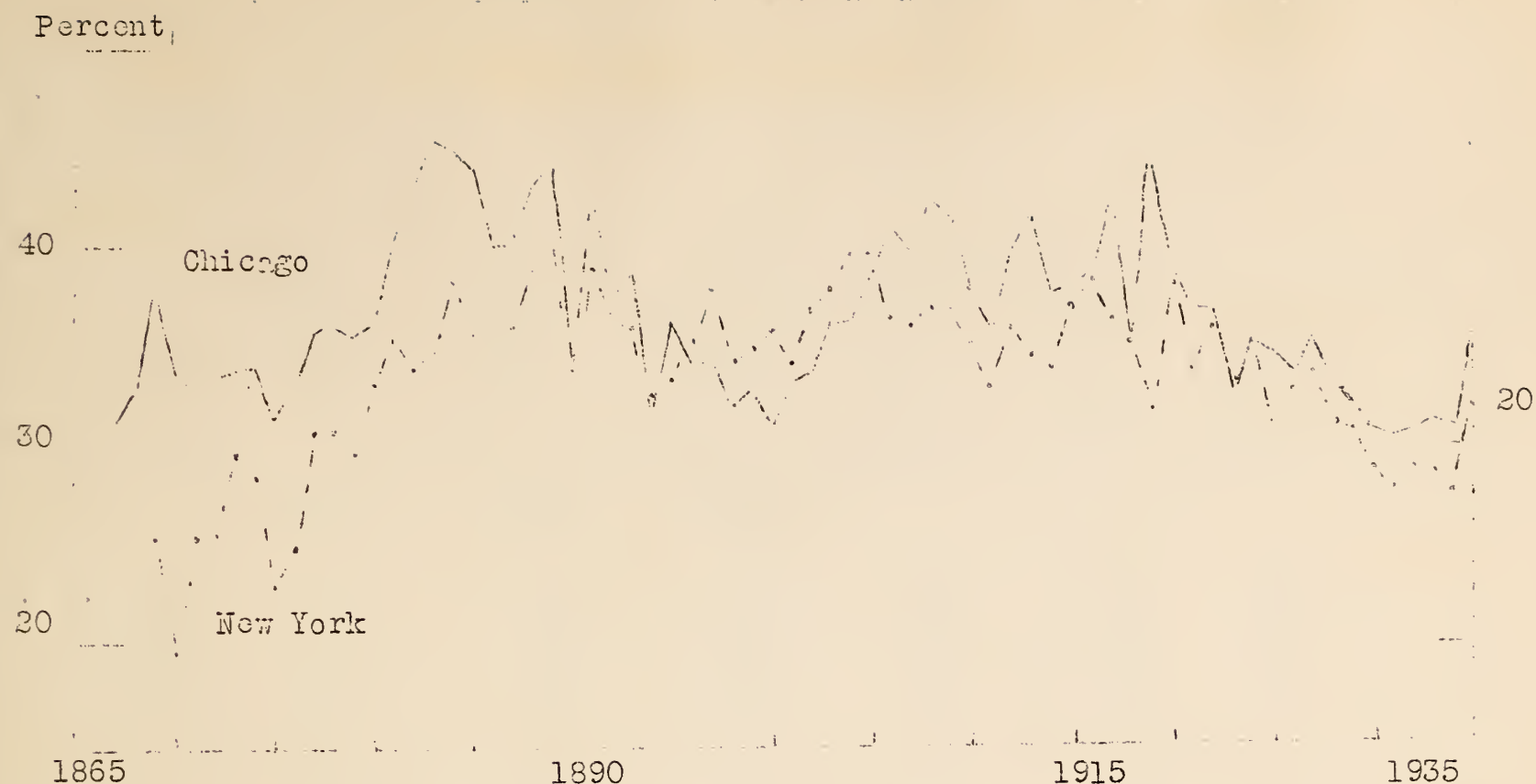
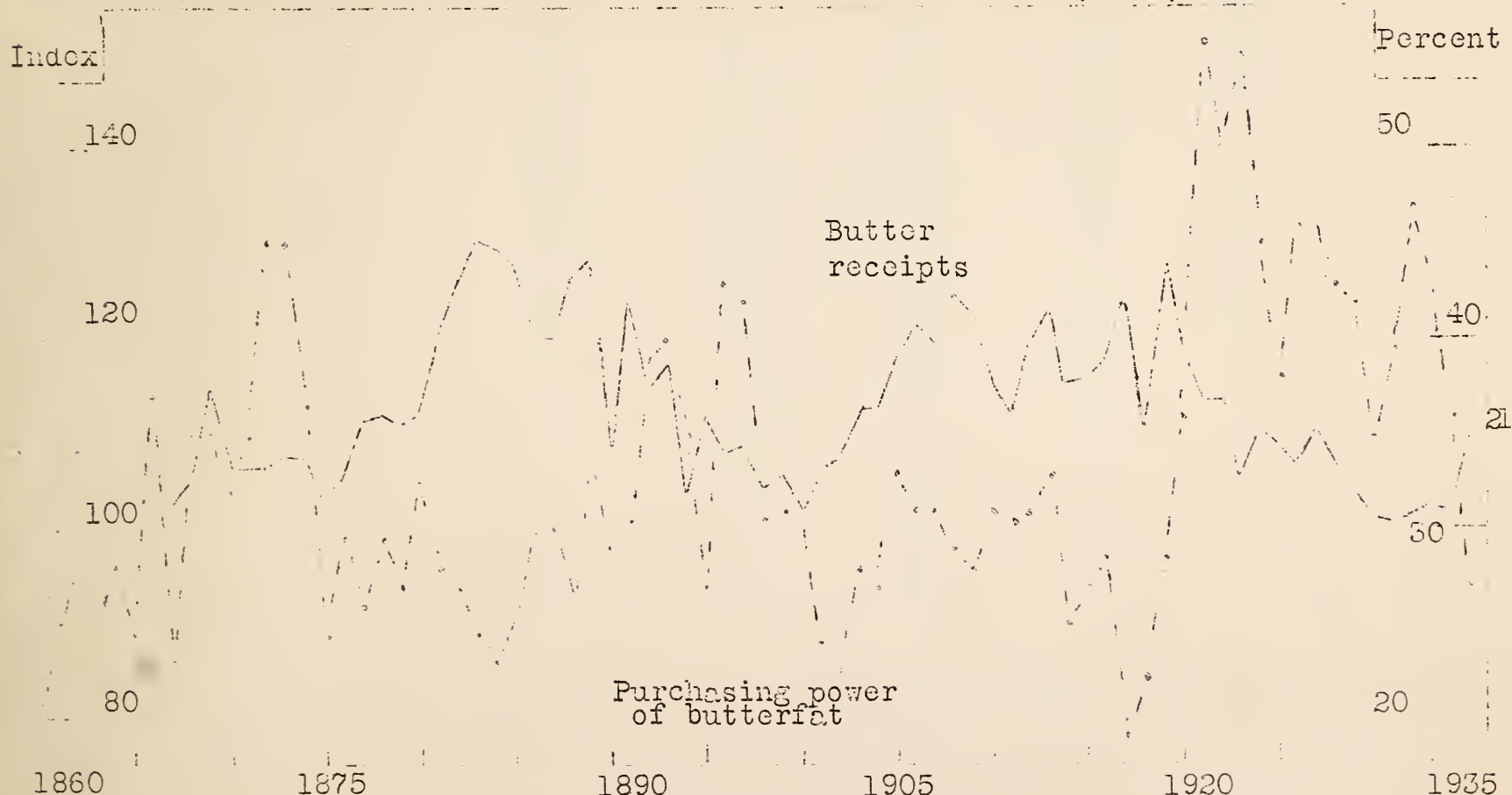


FIGURE 20. - PERCENTAGE OF ANNUAL BUTTER RECEIPTS IN JUNE, JULY, AND AUGUST AT CHICAGO AND NEW YORK, 1867-1935

The proportion of the total yearly receipts of butter at New York in June, July, and August does not show the cyclical movement that is shown in Chicago receipts.

FIGURE 21. - INDEX NUMBERS OF THE PURCHASING POWER OF THE FARM PRICE OF BUTTERFAT IN TERMS OF FEED GRAINS AND MEAT ANIMALS, 1910-14 = 100, AND THE PERCENTAGE OF THE ANNUAL RECEIPTS OF BUTTER AT CHICAGO IN JUNE, JULY, AND AUG. 1851-1936



The periods of high prices of butterfat in relation to feed grains and meat animals have coincided in a rough way with the periods when receipts of butter at Chicago in the summer months were relatively low or when the proportion of the receipts in the summer declined. The periods of relatively low prices of butterfat have coincided with the periods in which summer receipts were relatively high.



Table 1.-Farm price of butterfat, retail price of butter, and margin between retail price of butter and farm price of butterfat, 1910-36

Year	Farm price: 0.8085 pounds of butterfat 1/	Retail price of butter per pound	Margin between retail and farm price	Index numbers 1910-14 = 100			Percent- age farm price is of retail price
	Cents	Cents	Cents	Farm price of butter- fat	Retail price of butter	Margin between retail and farm price	Percent
1910-14:	21.3	36.3	15.0	100	100	100	59
1915-20:	33.9	53.2	19.3	159	147	129	64
1921-24:	32.1	51.7	19.6	151	142	131	62
1925-29:	35.5	55.0	19.5	167	152	130	65
1930-34:	19.4	33.4	14.0	91	92	93	58
1910 :	21.6	35.9	14.3	101	99	95	60
1911 :	19.2	33.7	14.5	90	93	97	57
1912 :	22.0	37.4	15.4	103	103	103	59
1913 :	22.6	38.3	15.7	106	106	105	59
1914 :	20.9	36.2	15.3	98	100	102	58
1915 :	21.3	35.8	14.5	100	99	97	59
1916 :	24.3	39.4	15.1	114	109	101	62
1917 :	31.1	48.7	17.6	146	134	117	64
1918 :	37.8	57.7	19.9	177	159	133	66
1919 :	43.8	67.8	24.0	206	187	160	65
1920 :	45.2	70.1	24.9	212	193	166	64
1921 :	31.0	51.7	20.7	146	142	138	60
1922 :	29.6	47.9	18.3	139	132	122	62
1923 :	34.9	55.4	20.5	164	153	137	63
1924 :	32.7	51.7	19.0	154	142	127	63
1925 :	34.2	54.8	20.6	161	151	137	62
1926 :	33.9	53.1	19.2	159	146	128	64
1927 :	35.9	55.6	19.7	169	153	131	65
1928 :	37.2	56.5	19.3	175	156	129	66
1929 :	36.5	55.1	18.6	171	152	124	66
1930 :	28.3	46.1	17.8	133	127	119	61
1931 :	20.5	35.4	14.9	96	98	99	58
1932 :	14.6	27.4	12.8	69	75	85	53
1933 :	15.2	27.3	12.1	71	75	81	56
1934 :	18.6	31.2	12.6	87	86	84	60
1935 :	23.0	35.6	12.6	108	98	84	65
1936 2/:	25.7	39.2	13.5	121	108	90	66

1/ According to survey made by the Bureau of Agricultural Economics, creameries purchased .8085 pounds of butterfat per pound of butter made.

2/ January to August.







Table 3.- Index numbers of cost of manufacture and distribution of butter and other food products, and farmer's share of consumer's dollar, 1910-36

Year	Cost of manufacture and distribution of butter, 1910-14 = 100	Warren and Pearson, cost of distribution of food, 1910-14 = 100	1/	Been and Waugh, cost margin between farm and retail prices for 58 foods, 1913-14 = 100	2/	Farmer's share of consumer's dollar, 58 foods	Percentage the farm price of 0.8085 pounds of butterfat is of retail price of butter
						Percent	Percent
1910	95	92					60
1911	97	98					57
1912	103	102					59
1913	105	104		99		53	59
1914	102	105		101		53	58
1915	97	105		103		52	59
1916	101	110		108		54	62
1917	117	129		123		60	64
1918	133	159		150		58	66
1919	160	174		169		57	65
1920	166	202		202		53	64
1921	138	190		187		44	60
1922	122	175		169		45	62
1923	137	177		177		45	63
1924	127	180		177		45	63
1925	137	185		177		48	62
1926	128	192		180		48	64
1927	131	190		180		47	65
1928	129	190		178		48	66
1929	124	198		184		47	66
1930	119	196		184		44	61
1931	99	178		168		38	58
1932	85	153		151		33	53
1933	81	140		144		35	56
1934	84	158		157		37	60
1935	84	174		160		42	65
1936	3/ 90						3/ 66

1/ Farm Economics, No. 95, page 2317, May 1936 and No. 50, page 835, Jan. 1928.

2/ Been, Richard O., and Waugh, Frederick V., Price Spreads Between the Farmer and Consumer, Bureau of Agricultural Economics, mimeograph report, table 9, page 33, July 1936. The index was published on a 1926 base.

3/ January to August.



Table - Farm price of milk used for cheese production in Wisconsin, retail price of cheese and margin between price of milk and cheese and index numbers, 1910-1936

Year	Price paid to	Retail	Margin	Index numbers 1910-14 = 100		
	farmers for	price	between	Price		
	10.429 pounds of	of	retail	paid to:	Retail	
	milk used for	cheese	and	farmers:	price	Margin
	cheese production	per lb.	farm	for	of	
	in Wisconsin 1/	2/	price	milk	cheese	
	Cents	Cents	Cents			
Average:						
1910-14	13.6	22.4	8.8	100	100	100
1915-20	22.5	33.7	11.2	165	150	127
1921-24	18.1	34.8	16.7	133	155	190
1925-29	20.2	37.5	17.3	149	167	197
1930-34	11.1	26.5	15.4	82	118	175
1910	13.6	22.8	9.2	100	102	105
1911	11.9	20.8	8.9	88	93	101
1912	15.0	23.6	8.6	110	105	98
1913	13.8	22.1	8.3	101	99	94
1914	13.7	22.9	9.2	101	102	105
1915	13.8	23.2	9.4	101	104	107
1916	17.2	25.8	8.6	126	115	98
1917	23.4	33.2	9.8	172	148	111
1918	27.3	35.9	8.6	201	160	98
1919	29.1	42.6	13.5	214	190	153
1920	24.3	41.6	17.3	179	186	197
1921	16.5	34.0	17.5	121	152	199
1922	17.8	32.9	15.1	131	147	172
1923	21.3	36.9	15.6	157	165	177
1924	16.6	35.3	18.7	122	158	212
1925	20.0	36.7	16.7	147	164	190
1926	19.2	36.6	17.4	141	163	198
1927	21.7	37.6	15.9	160	168	181
1928	21.0	38.5	17.5	154	172	199
1929	19.2	38.0	18.8	141	170	214
1930	15.7	35.1	19.4	115	157	220
1931	11.4	28.1	16.7	84	125	190
1932	8.6	23.0	14.4	63	103	164
1933	9.4	22.5	13.1	69	100	149
1934	10.5	23.7	13.2	77	106	150
1935	13.5	26.0	12.5	99	116	142
1936 3/	13.8	27.1	13.3	101	121	151

1/ According to a survey made by the Bureau of Agricultural Economics it was estimated that cheese factories in Wisconsin producing American cheese purchased 10.429 pounds of milk per pound of cheese made. The price of 10.429 pounds of milk was calculated from the prices paid to producers for milk used for cheese as reported by the Wisconsin Crop and Livestock Reporting Service, Dr. Walter H. Ebling, Statistician.

2/ Retail prices of cheese in cities as reported by the United States Bureau of Labor Statistics.

3/ Average January-July.





Table - Farmer's share of consumer's dollar for cheese, butter, and 58 foods combined, 1910-1936

Year	Cheese	Butter	1/	58 foods	2/	Year	Cheese	Butter	1/	58 foods	2/
	Percent	Percent		Percent			Percent	Percent		Percent	
Average:											
1910-14	61	59	3/	53		1921	49	60		44	
1915-20	66	64		56		1922	54	62		45	
1921-24	52	62		45		1923	58	63		45	
1925-29	54	65		48		1924	47	63		45	
1930-34	42	58		37		1925	54	62		48	
1935-	52	65		42		1926	52	64		48	
						1927	58	65		47	
1910	60	60				1928	55	66		48	
1911	57	57				1929	51	66		47	
1912	64	59				1930	45	61		44	
1913	62	59		53		1931	41	58		38	
1914	60	58		53		1932	37	53		33	
1915	59	59		52		1933	42	56		35	
1916	67	62		54		1934	44	60		37	
1917	70	64		60		1935	52	65		42	
1918	76	66		58		1936	4/ 51	4/ 66		5/ 43	
1919	68	65		57							
1920	58	64		53							

1/ The Dairy Situation, Bureau of Agricultural Economics, DS-62 Vol. 3, page 120, October 21, 1936.

2/ Been, Richard C., and Waugh, Frederick V., Price Spreads between the Farmer and Consumer, Bureau of Agricultural Economics mimeograph report, table 9, page 33, July 1936.

3/ Average 1913 and 1914.

4/ Average January to July.

5/ Average January to May.





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1526	$9\frac{3}{4}$	"	$7\frac{1}{8}$	"	"	1933	14	"	11 " "
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